Exposure assessment

“Exposure Assessment The qualitative and/or quantitative evaluation of the degree of intake likely to occur”

• Identify the exposure pathways via which resistance determinants on human pathogens reach humans and cause adverse health effects;
• Look at the frequency and magnitude of these exposures; and
• Design of monitoring programs
• Consider how changing the use of antimicrobials and other possible risk management actions (e.g. irradiation) would affect the exposure
General exposure pathways: origins

Food

Water

Humans

Animals
Exposure pathways: particular origins

- **Food**
  - Chicken
  - Turkey
  - Beef
  - Pork
  - Produce

- **Water**
  - Sewage
  - Litter

- **Humans**
  - Community
  - Hospital
  - Food worker

- **Animals**
  - Livestock
  - Pets
  - Wildlife
<table>
<thead>
<tr>
<th>Salmonella</th>
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<tbody>
<tr>
<td><strong>Food</strong></td>
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Staphylococcus aureus

<table>
<thead>
<tr>
<th>Category</th>
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<tr>
<td>Food</td>
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<td>Humans</td>
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Salmonella

Food
- Chicken
- Turkey
- Beef
- Pork
- Produce

Water
- Sewage
- Litter

Humans
- Community
- Hospital
- Food worker

Animals
- Livestock
- Pets
- Wildlife

Community

Hospital
### Salmonella

#### Goal is to rank exposure pathways based on frequency and magnitude of exposures

<table>
<thead>
<tr>
<th>Category</th>
<th>Community Hospital</th>
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</thead>
<tbody>
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<td><strong>Food</strong></td>
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### Salmonella

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Goal is to rank exposure pathways based on frequency and magnitude of exposures:
- prevalence of bacteria
- prevalence of resist. determinants
- bacterial load
- degree of interaction (consumption/contacts)
Salmonella

Food
- Chicken
- Turkey
- Beef
- Pork
- Produce

Water
- Sewage
- Litter

Humans
- Community
- Hospital
- Food worker

Animals
- Livestock
- Pets
- Wildlife

Community Hospital

Ranking of pathways by frequency and magnitude

Design of monitoring programs
Salmonella

Food
- Chicken
- Turkey
- Beef
- Pork
- Produce

Water
- Sewage
- Litter

Humans
- Community
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- Food worker

Animals
- Livestock
- Pets
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Community Hospital

Risk management actions

Changes frequencies and magnitudes

New ranking of pathways

New monitoring programs
Exposure assessment

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